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## INFORMATIONAL AND TECHNOLOGICAL PRINCIPLE OF THE TOURISM PLANNING

**Problem statement.** Tourism planning is an important part of efficient and rational organization of tourism and recreational activities in the region. Indeed, creating a unique product or service is only possible with the effective use of tourism and recreational potential of the area, taking into account existing and potential needs of the population in tourism and recreational activities, stakeholders' willingness to develop tourism in a particular area. Large amounts of information, which tourism industry is full of, necessitate the use of information technology to ensure the quality of management.

**Topicality.** During the tourism planning we involve a huge number of stakeholders, structures and bodies which requires an effective system of coordination between them. The necessity for processing the large amount of various qualities of information stipulates the use of complex information technologies intended for modeling and forecasting the spatial development of infrastructure and tourism industry facilities. However, comprehensive information technologies and special systems one hardly uses.

**Purpose.** The purpose of this article is the substantiation of the informational and technological principle of the tourism planning, which at the level of tourism product combines coordination activities of the various tourism industry businesses and creation of channels of promotion of tourist trail, networks, consumer awareness, branding strategies etc.

**Digest.** Designing – is a special kind of management technology based on project approach. The essence of project-based management is considered and multifunctionality of tourism planning is stipulated. The analysis of domestic and foreign researches allowed singling out types of designing in tourism, approaches to tourism planning, as well as key principles that must be the basis for tourism planning. It is substantiated the introduction of new informational and technological principle of tourism planning based on the necessity of efficiency of coordination of a large number of stakeholders and considering the needs in handling a large amount of various qualities of information that requires the use of certain modern technologies. Two aspects of informational and technological principle application at the level of designing the tourism product are shown. The technological aspect is related to the coordination of the various tourism enterprises to provide quality services to consumers. Informational aspect manifests through the creation of channels of promotion of hiking trails, networks, consumer awareness, branding strategies and more. The article indicates the possibility of applying of this principle at tourism destinations level and while designing infrastructure and tourism industry activities.

The article justifies the necessity of using geo information technologies, which are the most suited for modeling and forecasting of spatial development of infrastructure and tourism industry facilities. The list of tasks with data processing in the tourism industry, which can be solved using applied GIS, is determined. The circle of users of tourism GIS is marked. These advantages of using the tourism GIS during system solving tasks of the sectorial public authorities and local self-governments bodies and the examples of their use when solving problems are given:

- the creation of the State Cadastre of Natural Medicinal Resources;
- data the expert assessment and modeling of tourism events, forming the regional marketing plans and forecasts of market indicators on the basis of functional model of regional tourism GIS;
- providing actual relevant data and tourism and information services through mobile mapping application «All Ukraine».

**Conclusion.** Informational and technological principle of tourism planning becomes mandatory for use in the development of tourism projects. After all, this technology provides the ability to analyze the processes of taking up and running the tourism business, use of natural and recreational resources of the investigated area, the formation of options of scientifically grounded development strategies of tourism infrastructure at the regional level, expand the scientific and methodological basis of the tourist market research.

**Keywords:** tourism planning, tourism product, informational and technological principle, geoinformation systems, stakeholders.

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## ІНФОРМАЦІЙНО-ТЕХНОЛОГІЧНИЙ ПРИНЦИП ТУРИСТИЧНОГО ПРОЕКТУВАННЯ

У статті обґрунтовується необхідність використання інформаційно-технологічного принципу туристичного проектування при розробленні туристичних проектів. Враховуючи великі обсяги інформаційних потоків в туристичній галузі, пропонується вирішувати завдання з оптимізації туристичної діяльності з використанням геоінформаційних систем та веб-технологій. Наводяться приклади використання ГІС для організації геопросторових даних в туристично-рекреаційній сфері, зокрема для створення і ведення кадастрів природних лікувальних ресурсів.

**Ключові слова:** туристичне проектування, туристичний продукт, інформаційно-технологічний принцип, геоінформаційні системи, зацікавлені сторони

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## ИНФОРМАЦИОННО-ТЕХНОЛОГИЧЕСКИЙ ПРИНЦИП ТУРИСТИЧЕСКОГО ПРОЕКТИРОВАНИЕ

*В статье обосновывается необходимость использования информационно-технологического принципа туристического проектирования при разработке туристических проектов. Учитывая большие объемы информационных потоков в туристической отрасли, предлагается решать задачи по оптимизации туристической деятельности с использованием геоинформационных систем и web-технологий. Приводятся примеры использования ГИС для организации геопространственных данных в туристско-рекреационной сфере, в частности для создания и ведения кадастров природных лечебных ресурсов.*

**Ключевые слова:** туристическое проектирование, туристический продукт, информационно-технологический принцип, геоинформационные системы, заинтересованные стороны.

Постановка проблеми

✎ Development of a new tourism product needs its designing – project activity in the field of tourism and recreation. Tourism planning is an important part of efficient and rational organization of tourism and recreational activities in the region. Indeed, creating a unique product or service is only possible with the effective use of tourism and recreational potential of the area, taking into account existing and potential needs of the population in tourism and recreational activities, stakeholders' willingness to develop tourism in a particular area. Large amounts of information, which tourism industry is full of, necessitate the use of information technology to ensure the quality of management.

Аналіз останніх досліджень і публікацій

✎ Problems of designing of tourism services, tourism products and other forms of designing in tourism were explored in the works of Syryk N. and Kuskov S. [3] and Dzhandzhuhazova E. A. [4]. Tourism planning from the perspective of marketing approach is highlighted in M. A. Los' work [6]. The principles of tourism planning were identified in the works of local and foreign authors such as V. A. Kwartal'nyi [8], V. I. Kruzhalyn, N. V. Shabalin, E. V. Ayhyna, V. S. Novikov, N. I. Tul'ska [9, 10] and M. A. Sarancha [11]. Works of E. A. Dzhandzhuhazova [12], K. E. Belenkyi. [13], E. A. Zakharchenko, O. N. Nikipelova, S. V. Leonova [14] and S. M. Omelyanets' [16] are dedicated to the problems and principles of organizing of information about recreational resources using GIS technology.

During the tourism planning we involve a huge number of stakeholders, structures and bodies which requires an effective system of coordination between them. The necessity for processing the large amount of various qualities of information occurs, that requires the use of complex information technologies intended for modeling and forecasting the spatial development of infrastructure and tourism industry facilities. However, in tourism industry one hardly use comprehensive information technologies, special systems, software systems intended to meet the challenges of forecasting objects of tourism infrastructure and processes of the tourism industry.

Мета

✎ The purpose of this article is the substantiation of the informational and technological principle of the tourism planning, which at the level of tourism product combines coordination activities of the various tourism

industry businesses and creation of channels of promotion of tourist trail, networks, consumer awareness, branding strategies etc. It is indicated on the appropriateness of this principle to optimize tourism activities using GIS.

✎ Designing – is a complex, creative activities aimed to choose out the best option for future actions to achieve the main goal. Designing constructs a model system that is built, determines its functional characteristics. The main content of designing is justification of set of means to help solve tasks and problems, to achieve a particular purpose. These products are fixed in two forms:

- as a system of parameters of designed object and their quantitative indicators;
- as a set of specific measures to ensure the implementation of planned indicators and qualitative characteristics of the future facility.

According to the Great Encyclopedic Dictionary [1], the designing is the process of creating the project – prototype, protoplast of alleged or possible object, state (the phenomenon or process).

Designing – is a special kind of management technology based on project approach. The basis of the project approach in management is the view of the project as at controlled change of the initial state of any system (e.g., state, organization or enterprise) associated with the expenditure of time and money. Investigation of process and regulation of changes implemented by predetermined rules within budget and time constraints, are the essence of project management. Project-oriented management is used when we clearly define: project task and the final result; allocated or available resources; timeframes and constraints. Project-oriented management is characterized by a clear focus on the achieving of the objective – the creation of «project product». Project-oriented management is considered as a new «flexible» method, which provides interrelation of creative efforts with the general tasks of leaders. Its essence is the formation of the management objectives, identifying problems requiring study and efficient solution, development of program or strategic plan for solving the problems, removing obstacles to achieve the set goals [2].

Thus, the designing – is innovative, creative activity aimed at identifying the causes of problems, analyzing of the actual state of the object, developing of ways and

Виклад основного матеріалу

means to achieve the project objective. Designing is carried out by an appropriate management technique. Potential possibilities of project approach allow to: imagine an ideal model of functioning and development of a particular object; describe the actual and future challenges concerning the investigated object; define the mechanisms of achieving the objectives and their interrelation;; project a new image and the structure of investigated phenomenon through appropriate programs; compare ideally constructed samples of the object development with the forms and stages of its real function.

Development of a new tourism product needs its designing.

Tourism or tourism and recreation planning – is a project activity in tourism and recreation. From the basic definition of «design» one can realize its multifunctionality relatively tourism and recreational activity: 1) it can refer to specific objects (e.g. tourism base); 2) may be associated with the formation of the specific prototype state – elaboration of the concept, program, tourism development strategy in a particular area; 3) can be focused on development of specific tourism product (or service). Thus, tourism and recreational designing can be viewed at three levels: designing of the tourism industry facility; tourism products designing; designing of tourism destination development (tourism and recreational complex) or the tourism industry as a whole in a particular area.

Tourism planning – is a combination of creative and innovative types of activities in which tourism project appears – materialized or intangible result, which has features of novelty and is directly created for the needs of the tourism industry, optimization of tourism enterprises, meeting the demand of consumers of travel services [3].

According to Dzhandzhuhazova E. [4], tourism planning has certain characteristics: limited terms of designing and creation of specific projects; the novelty of the product (service); a sequence of stages of development and implementation. Tourism project should be based on a reasonable balance between timing and budget to create a unique product; the purpose of the project is to bring it to the customer. Creating a unique product or service is only possible with the effective use of tourism and recreational potential of the area, taking into account existing and potential needs of the population in tourism and recreational activities, stakeholders' willingness to develop tourism in a particular area.

Apart from designing tourism services and tourism products one can distinguish several kinds of projecting in tourism: [5]:

- projecting the tourist areas (destinations, zones, districts, centers);
- projecting the linear tourism structures (routes);
- projecting the tourist enterprises and their complexes;
- projecting the tourism organizational structure;
- projecting the tourism enterprises business processes;
- projecting the main forms of tourist services;
- projecting the mechanism of nature tourism and so on.
- Considering approaches to tourism planning, you can determine its wide understanding as an important component of effective and rational organization of tourism and recreational activities in

the region [6]. Under this approach, travel planning – is any activity that is related to the organization of tourism in a particular area by using the existing tourism potential (resources and tourism infrastructure).

The marketing approach to tourism planning – is the development of tourism projects on the structure, pricing, distribution channels and promotion of tourism products and services; the application of modern information technologies; creating new types of tourism products and services. This approach includes projecting: of tourism offer, prices and pricing policies, promotion of tourism products, business processes and business plans of tourism organizations [7].

While designing the tourism product two research positions are mainly represented: what is in the basis of the project «tourism resources» or «tourist needs». Needs are often assigned a leading role in the emergence of the project idea. However, in most regions of the world resources determine the main types of tourism.

Zorin, I., Kvarita'nov V. [8], characterizing tourism planning, understand it as variational modeling of recreation programs and their system service with the requirements of recreation. The tourism and recreational activities hierarchy principle and activity-landscape principle are put into the basis of modeling of tourism products. These two principles allow considering the tourism planning as structural and modular process.

The analysis of domestic and foreign experience shows that the basis for tourism planning should be put several key principles [9, 10, 11, 12]:

- the principle of development – the basis of all types of tourism planning. Based on the analysis of modern tourism and recreational needs, trends in tourism demand, assess of tourism and recreational potential of the area, specific «points of growth» are highlighted and as a result of tourism project realization can gain a momentum of further specialized development;
- structuring principle is that as a result of tourism and recreational activities, special tourism and recreational system are formed consisting of interconnected components. The components of tourism and recreation system are the key tourism and recreational resources of the territory, their territorial combination, as well as elements of the overall socio-economic system of the territory. The process of designing should be limited to identifying key structuring elements and describing the nature of their interconnections;
- economic principle says that the finished project – is a list of documents, including financial justification of the tools anticipated for implementation and their profitability. The designing process should be focused on long-term economic efficiency in compliance with the principles of sustainable development;
- territorial (geographic) principle implies the withdrawal of certain territories for construction sites, the laying of hiking trails under the allocation of specialized recreational areas and more. This principle is the foundation stage of justification of borders of specialized area functional zoning, recreational capacity determining, monitoring the

safety of tourists and reduce natural risks, planning decisions constructed objects, etc;

- ecological principle determines that tourism planning must be conducted in accordance with current legislation and adopted regulatory documents. During the development of tourism projects it is necessary the compliance with environmental requirements both at the stage of the terms of reference, and at the next stages of project development and implementation;
- technical principle emphasizes that the project activities is related to the preparation of a specific set of documents specified by the relevant regulatory documents, including state standards. Proper preparation of documents is necessary for obtaining financing for the project.

Considering that in the tourism planning process, on the one hand – a huge number of stakeholders and bodies which requires an organization of effective system of coordination between them are involved and on the other – the necessity in processing a large amount of various qualities information that requires the use of certain technologies, it is reasonable to justify the informational and technological principle, which manifests itself in different ways in solving specific problems within the tourism planning.

While designing a tourism product, the technological aspect is related to the coordination of the various business activities of the tourism industry enterprises to provide quality services to the consumers. Information aspect manifests through the creation of channels of promotion of hiking trails, networks, consumer awareness, branding strategies and so on.

When designing tourism destinations informational and technological principle is related to the assessment of the tourism and recreational potential of the territory, creation of tourism and recreational GIS, singling out the most favorable areas for recreation and tourism development, determining maximum allowable tourist and recreational pressures on natural systems.

While designing the infrastructure and types of activities of the tourism industry following mechanisms are defined: activation of business activities in a particular area, improving the socio-economic impact from tourism development; including the depressed areas in tourist development, etc.

Large amounts of information, which tourism industry is full of, necessitate the use of information technology to ensure the quality of management. Today, informational and software of tourism industry is mainly represented by programs to automate accounting activity of travel companies and hotels. However, no comprehensive informational technologies, specialized systems, software systems designed to meet the challenges of forecasting of objects of tourism infrastructure and processes of the tourism industry. Solving this problem requires the use of complex informational technologies designed for modeling and forecasting the spatial development of infrastructure and tourism industry facilities. Modern methods of analysis of spatial distribution and modeling of spatial development are based on the use of GIS technology.

Geographic information system (GIS) – is an information model of real space according to the set list of features and characteristics, active and multifunctional database

that can be constantly updated and supplemented. The core of GIS is a subsystem of knowledge about the object that interacts with the subsystems of information retrieval, its processing, receiving new information and submitting it to the user system.

The feature of tourism projects is the realization of a long-term strategy of regional development and construction of infrastructure facilities at a given geographical area in a given period of time and in this geopolitical context. Operational spatial visualization of territory forecast in all thematic areas, which is complemented by a comprehensive analysis of alternatives, constraints and risks is not possible without software support based on GIS technologies.

Tourism – is one of the traditional areas of geoinformation technologies appliance. However, in our country, GIS is still mainly used only for preparation tourist maps, brochures and other printed products containing maps and charts. At the same time, for areas with unique natural potential or with historical and cultural values it is necessary to create an applied GIS of broad profile to help to solve the following problem:

- accounting of natural, historical and cultural attractions of territory;
- accounting of tourism services enterprises;
- accounting of hiking trails;
- analysis of tourist flows;
- planning of territory development.

Circle of such tourist GIS users is quite wide: from the departments of regional administrations of culture and tourism, which are planning the development of tourism and recreational services to ordinary citizens who want to choose the appropriate destinations and / or watch the hiking trails. Thus, travel GIS should provide several levels of use and be built as separated systems.

The necessary condition of optimization of tourism activities is the consideration of the spatial aspect which is now fully capable of providing advanced GIS and Web-technologies.

An important aspect of mass distribution of GIS is the use of geospatial data by public authorities and local governments to create and maintain inventories of natural resources and for environmental monitoring and in information systems to support the decision making (figure 1).

Implementation of GIS technology in tourism and recreation industry provides:

1. Creating and maintaining inventory of tourism and recreational resources;
2. Monitoring of tourism and recreational areas by GIS facilities and remote sensing to monitor the use of tourism resources and compliance with environmental legislation within objects of nature and reserve funds;
3. Creation of geographical information system of tourism infrastructure of in order to: provide sales services via the Internet; implementation of marketing activities; organization of consumer informing on available tourism services and products; providing the safety of hiking trails; the implementation the analysis of statistical data on tourism development in real mode;
4. Implementation of information support of activities for the protection of cultural and natural heritage.

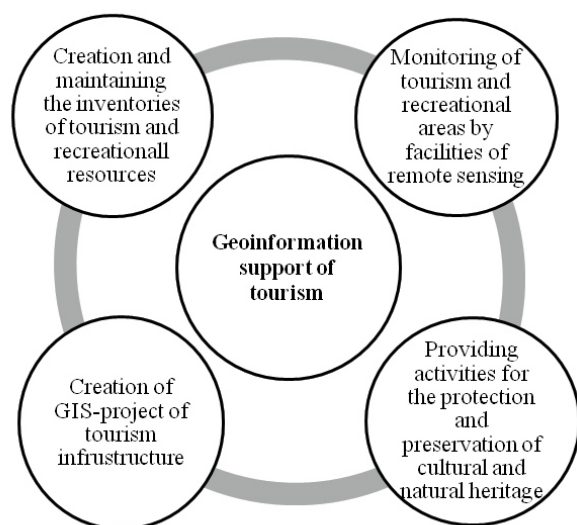


Figure 1 – Modern information technologies in the system of geoinformation software of tourism

One of the most pressing issues of GIS using in the tourism sector is the creation of the State Cadastre of Natural Medicinal Resources (PCR). Indeed, the presence of various PCR in natural territory defines the grounds for creating resorts.

All natural healing resources have spatial location, which is identified by special geodetic devices. Therefore, the most effective analysis tool is GIS, which combines possibilities of provision an attribute information through a database management system (DBMS) and designed to work with spatially coordinated information. In recent years in the field of science several works have been published [13, 14, 15, 16] which consider the use of GIS in the organization of information on PCR objects. It was approved at the legislative level, the use of GIS in the formation and maintenance of the State Cadastre of natural medicinal resources [17, 18]. GIS exactly provides an opportunity of immediate obtaining the information and spatially-territorial distribution of all PCR objects.

The scientists of the National University «Lviv Polytechnic» developed a functional model of tourism regional information system, which provides that a regional tourism market consists of manufacturers of tourism services, tour operators, travel agents, tourists, ensuring a procedure of collecting primary information. Based on the submitted data the expert assessment and modeling of tourism events is made and regional marketing plans and forecasts of market indicators are established [19].

State Research and Production Enterprise «Cartography» initiated the creation of a digital tourism information product. Cartographic mobile application «All Ukraine» - is a project that reflects the development of cartography in the modern information society. It contains a large amount of information, including tourism information as well. The program works in off-line mode, i.e. retains full functionality, even without Internet access.

Creation of information product «All Ukraine» - is a complex procedure that requires detailed geospatial data sets for digital cartographic basis and relevant data of tourism and information services [20].

Thus, taking into account strategic orientations of development of the tourism industry in our country, informational and technological principle of tourism planning becomes the methodological basis of preparation and decision making in the management of tourism projects and promotes technological symbiosis of project management and geographic information systems. Solving the problem of spatial planning during the implementation of the tourism project, for example, the selection of functional areas, involves the use of methods both project management and geo-modeling, used at the stage of gathering information and at the stage of analysis and synthesis, and also decision making support concerning conclusions analysis of project decisions. In such a case the greatest value GIS technology have for processing initial information and synthesis while the development of project decisions requires directly expert work of project designer.

Analysis of domestic and copyright works of modern information technologies and modeling of spatial analysis in GIS environment allows us to conclude that the informational and technological principle of tourism planning becomes mandatory for use in the development of tourism projects. After all, this technology provides the ability to analyze the processes of taking up and running the tourism business, use of natural and recreational resources of the investigated area, the formation of options of scientifically grounded development strategies of tourism infrastructure at the regional level, expand the scientific and methodological basis of the tourist market research.

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